Surveying and Field Reconnaissance for the Bull and West Bull Creek Floodplain Modeling and Mapping Study

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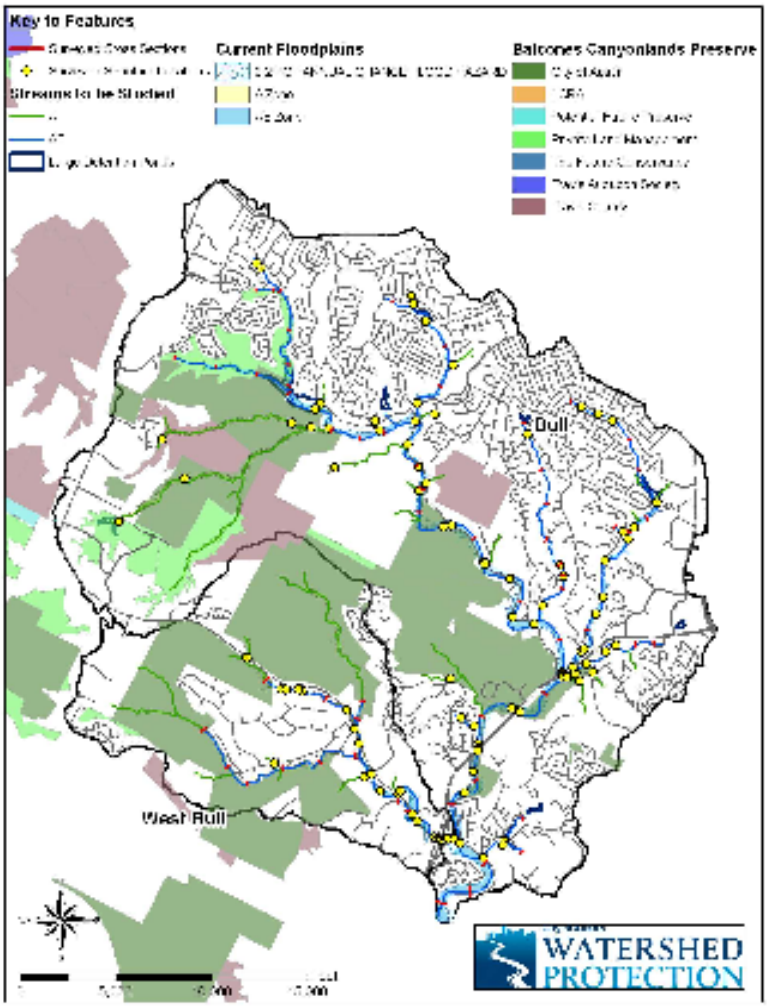
The Floodplain Management Section of the Watershed Protection Department is conducting several watershed-scale floodplain study updates throughout the City. One of the largest of these studies encompasses the Bull Creek watershed. Bull Creek, including West Bull Creek, is a suburban watershed with a drainage area of approximately 31.5 square miles and 47.94 miles of streams to be studied as part of the ongoing floodplain restudy. The watershed is bordered roughly by the Colorado River on the south, R.R. 620 on the west, U.S. 183 on the north and the Shoal Creek Watershed to the east. The watershed ultimately discharges into the Colorado River. The watershed boundary and study streams are shown in Figure 1.

Figure 1: Bull and West Bull Creek Project Study Area



The current effective flood insurance study for Bull and West Bull Creeks was developed in 1977. For the 2008 effective Flood Insurance Rate Maps (FIRMs), the previous effective floodplain was redelineated on 2003 LiDAR topography. Significant development activity has impacted portions of the Bull Creek watershed since the original modeling for the 1977 study. The ongoing floodplain restudy will update and extend the mapping based on new topographic data and land use conditions.

Given the large areas of Balcones Canyonland Preserve (BCP) through which Bull Creek, West Bull Creek and their tributaries flow, it has been necessary to perform a considerable number of topographic surveys and field reconnaissance visits on BCP land. These surveys of channel cross sections and structures crossing the various streams were collected and documented according to Federal Emergency Management Agency (FEMA) guidelines and specifications and have been incorporated into the hydraulic modeling for the study. These new hydraulic models will allow the City to better predict the potential impacts of flooding along the streams considered in the study. The survey data collected on BCP land is summarized in Table 1.

Table 1: Bull and West Bull Creek East Floodplain Study and Mapping Summary

Watershed	Basin Area (sq mi)	Approximate Study Stream (miles)	Detail Study Stream (miles)	Cross Sections Surveyed on BCP Land*	Structures Surveyed on BCP Land*
Bull Creek	24.41	12.18	24.04	14(5)	14(2)
West Bull Creek	6.95	5.80	7.26	8	0
Total	**31.36**	**17.98**	**31.30**	**22(5)**	**14(2)**

* Numbers in parenthesis indicate the surveyed cross sections and structures on privately maintained BCP land.

The survey and data collection required for the Bull and West Bull Creek floodplain study was completed in September 2011 and will be fully documented in a Technical Support Data Notebook (TSDN) produced for the study. The hydrologic and hydraulic engineering and floodplain mapping components of the study will be completed in May 2012 followed by the preliminary FIRMs which will be released in late 2012. Once completed and approved by the City, the hydrologic and hydraulic modeling produced for the study will be used for regulatory purposes within the watershed. The final floodplain maps should be adopted by FEMA in late 2013.